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Biofuels Annual

Indonesia Biofuels Annual Report 2015

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Report Highlights:

While the biodiesel industry has grown dramatically since 2006, ineffective policies and insufficient supply chain infrastructure have caused biodiesel use to fall far short of aggressive mandates (use goals) and the nascent fuel ethanol market to completely disappear. Regulations issued in 2015 introduce a new support scheme and pricing formula for biodiesel and new biofuel mandates, changes which are expected to spur further growth for biodiesel. At the same time, low petroleum prices have weakened foreign demand for biodiesel and are slowing Indonesian biodiesel exports. In a few short years, the biodiesel economy has shifted from export driven to one driven by domestic demand. No changes in the fuel ethanol market are foreseen through 2016.

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I. Executive Summary

While the biodiesel industry has grown dramatically since 2006, ineffective policies and insufficient supply chain infrastructure have caused biodiesel use to fall far short of aggressive mandates (use goals) and the nascent fuel ethanol market to completely disappear. Regulations issued in 2015 introduce a new support scheme and pricing formula for biodiesel and new biofuel mandates, changes which are expected to spur further growth for biodiesel. At the same time, low petroleum prices have weakened foreign demand for biodiesel and are slowing Indonesian biodiesel exports. In a few short years, the biodiesel economy has shifted from export driven to one driven by domestic demand. No changes in the fuel ethanol market are foreseen through 2016.

II. Policy and Programs

New Plantation Fund

Indonesia has created a new funding mechanism for its biofuels subsidy. The new program will impose a levy on palm oil exports and is expected to provide a stable funding source for biofuel subsidies, thereby increasing domestic biodiesel consumption (See GAIN ID 1420). The levy was implemented on July 16, 2015, and was established by regulations 24/2015 and 61/2015, which created a “plantation fund” paid for by a levy on palm oil exports. According to regulation 61, the fund will be used for the procurement and utilization of biodiesel in order to fill the gap between the market index price of conventional diesel and the market index price of biodiesel. The fund will be collected at a rate of \$50 per ton of CPO and \$20-\$30 per ton of processed palm oil products. The fund will be managed by a public service agency (CPO fund agency) appointed by Ministry of Finance (MOF).

If the levy generates sufficient revenue to bridge the gap between fossil fuels and biodiesel prices, Post expects that the levy will have significant implications for the Indonesian palm oil and biodiesel industries. CPO production, which continues to grow, will face increased demand from domestic biodiesel producers. As a result, CPO stocks are expected to moderate. The Indonesian Palm Oil Association (GAPKI) also suggests that CPO exports may soften slightly due to higher fob export prices resulting from the levy.

Revisions to Reference Price

Indonesian biodiesel producers incurred heavy losses following the 2014 drop in crude oil prices. This led to the abandonment of previous subsidy programs in February 2015 and the enactment of a new biofuels price index formula in March 2015 through Ministry of Energy and Mineral Resources (MEMR) Regulation 726/2015. Previously, Indonesia’s biodiesel reference price was based on the Mean of Platts Singapore (MOPS) price. According to MEMR 726, the MOPS price has been replaced by the current market price of CPO. The new price formula covers biodiesel production costs and a 3 percent margin. The Government of Indonesia (GOI) expects the new biofuels price index formula to more accurately reflect market dynamics. Post notes that revisions to the reference price have been ongoing throughout 2015, and as a result, biofuel subsidies have not been provided for most of the calendar year. The reference price formula is critical in determining the size of the payment subsidy to bridge the gap between biodiesel and diesel, and therefore critical to meeting the new mandates. With

the implementation of the palm oil levy in July, the Indonesian Biofuel Producers Association expects that the subsidy will be fully implemented in September at a 15 percent blend rate.

Policy Background

Indonesian biofuels policy is governed by a number of regulations and decrees. Government regulation 1/2006 was an important first step for the development biofuels in Indonesia. The regulation governs the acceleration of the procurement and usage of biofuels. In support of Regulation 1, Presidential decree 20/2006 established a National Biofuels Development Team, which supervises biofuel implementation programs and has created a blueprint for biofuels development. According to the blueprint, biofuels development aims to (1) alleviate poverty and unemployment, (2) drive economic activities through biofuel procurement and (3) reduce domestic fossil fuel consumption. This was followed by Indonesia's House of Representative (DPR), which passed Energy Law (UU 30/2007) to strengthen regulations prioritizing the use of renewable energy and biofuels.

In 2008, the GOI created a biofuel blending mandate through MEMR Regulation 32. The blending mandate regulation has been revised several times, most recently through MEMR Regulation 12, released in March 2015. This regulation increases mandatory biodiesel blending from 10 percent to 15 percent for transportation and industrial uses. Regulation 12 also increases mandatory blending to 25 percent for electricity generation as of April 2015. The GOI expects that domestic CPO consumption will increase by 3.5 million kiloliters (equal to 2.9 million metric tons (MMT), resulting in an estimated 15 percent reduction of diesel imports.

Indonesia's biodiesel mandates have been aggressive historically. In 2014, blending rates were set at 10 percent for 2014 and 2015. 2015 rates were revised up to 15 percent as per MEMR regulation 12/2015 (See Table 2). Interestingly, historic data shows that while Indonesia's biofuel consumption has grown swiftly, they have yet to reach their blending mandates (See Table 1). Industry sources confirm that blending has remained below target due to supply shortages, caused by infrastructure weaknesses and funding shortfalls for subsidies. Post notes, however, that necessary infrastructure, such as blending facilities and storage tanks, is coming on line. Additionally, Indonesia's new levy is expected to provide a regular funding stream that will maintain biodiesel's competitiveness, even in the face of low global fossil fuel prices. As a result, Industry is hopeful that B-15 biodiesel should become common in Indonesia's major population centers, including Java, Sumatera, Kalimantan and Sulawesi over the next two years. Expansion into the outlying eastern islands will continue to be hindered by distribution challenges.

Table 1. Indonesian Biodiesel Mandatory Targets / Domestic Consumption (million liters)

	2010	2011	2012	2013	2014
Mandatory Target	1076	1297	1641	2017	4000
Domestic Consumption	220	258	670	1048	1600
Percent of Target Achieved	20%	28%	41%	52%	40%

Blending mandate regulations define the minimum biofuel quantity used in each end use category for the certain period of year. Table 2 shows GOI plans to increase the percentage use of biodiesel in total diesel consumption up to 2025. This new target would require at least 4.86 billion liters of biodiesel to be blended in the transportation sector in the next year, which does not appear attainable at this time.

Table 2. Indonesia Biodiesel Mandatory Target as stated in Regulation 12/2015

Biodiesel (Minimum)				
Sector	April 2015	2016	2020	2025
Transportation, Public Service Obligation (PSO)	15%	20%	30%	30%
Transportation, Non-PSO	15%	20%	30%	30%
Industry	15%	20%	30%	30%
Electricity	25%	30%	30%	30%

Source: MEMR Regulation 12/2015

Note: Public Service Obligation (PSO) refers to subsidized fuel for road vehicles. It is uniquely sold through Pertamina, an Indonesian state-owned company. Non-PSO refers to unsubsidized fuel sold through private sector shops.

The GOI's ethanol mandatory schedule is shown in Table 3. Post notes that subsidies are only being implemented for transportation sector biodiesel. Given the lack of ethanol infrastructure, feedstock supply gaps, and the general focus on diesel, the GOI is unlikely to pursue ethanol blending.

Table 3. Indonesia Bioethanol Mandatory Target as Stated in Regulation 12/2015

Bioethanol (Minimum)				
Sector	April 2015	2016	2020	2025
Transportation, Public Service Obligation (PSO)	1%	2%	5%	20%
Transportation, Non-PSO	2%	5%	10%	20%
Industry	2%	5%	10%	20%

Source: MEMR Regulation 12/2015

Note: Public Service Obligation (PSO) for ethanol refers to subsidized fuel used by small scale industry, fishing and agriculture.

Table 4 shows the GOI's revisions to biodiesel mandatory blending targets between 2014 and 2015. Note that there is no change to mandatory biodiesel blending for the electricity generation sector.

Table 4. Comparison View of Biodiesel Mandatory Target Regulation

Biodiesel	Regulation 20/2014				Regulation 12/2015			
	2015	2016	2020	2025	2015	2016	2020	2025
Transportation, PSO	10%	20%	30%	30%	15%	20%	30%	30%

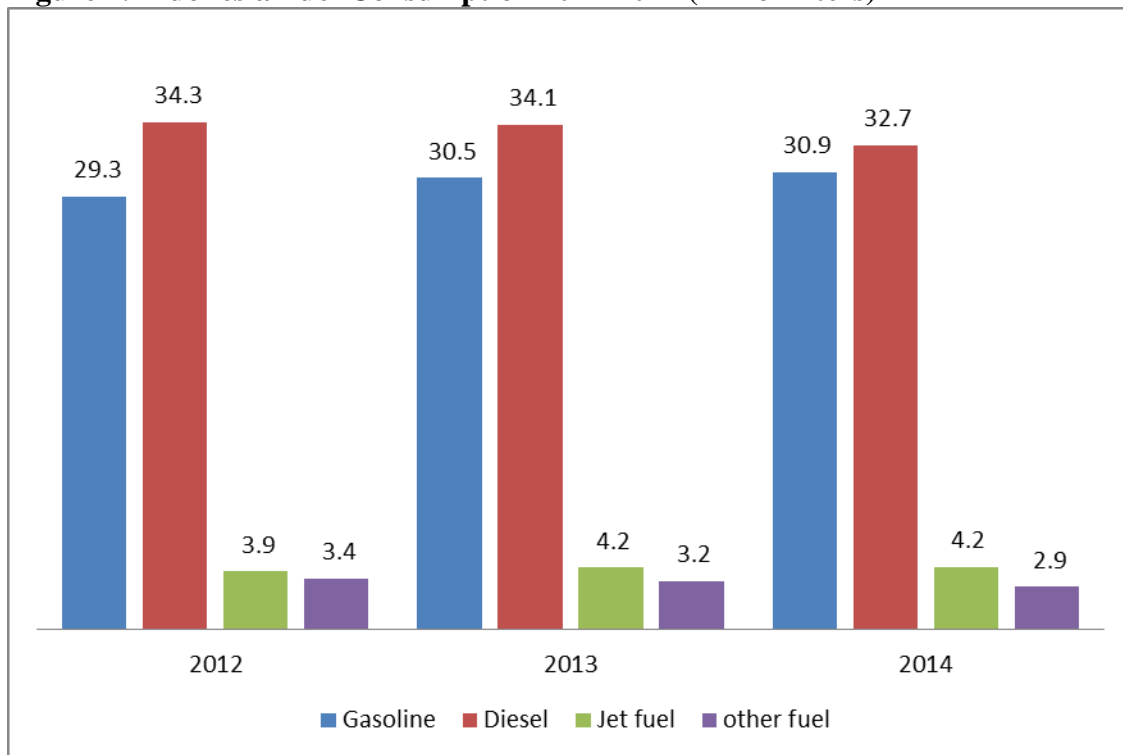
Transportation, Non-PSO	10%	20%	30%	30%	15%	20%	30%	30%
Industry	10%	20%	30%	30%	15%	20%	30%	30%
Electricity	25%	30%	30%	30%	25%	30%	30%	30%

For historic information on regulations 32/2008 and 5/2008 on blending targets, please refer to [GAIN Report ID1420](#), July 1, 2014.

Fuel Consumption & Outlook

Recent gasoline, diesel and jet fuel consumption show mixed trends. Indonesian gasoline consumption has increased by 1.6 billion liters since 2012 and jet fuel has increased 300 million liters. Diesel consumption decreased during the same period (See Figure 1). Total fuel consumption, including diesel, gasoline, jet fuel, and other fuel products have declined overall from 72.3 billion liters in 2012 to 70.7 billion liters in 2014. MEMR officials have cited a slowing global economy as the impetus for decreased fuel consumption.

Figure 1. Indonesia Fuel Consumption 2012-2014 (Billion liters)



Source: Oil & Gas Statistic, MEMR, recalculated

Indonesian fuel consumption is forecast to reach 119 billion liters by 2025 (See Table 5). Gasoline and diesel are expected to make up about 48 and 41 percent respectively, with the remainder being made up by jet and other fuel products. Diesel consumption is primarily focused in the transportation sector (road, rail, and shipping).

Indonesia has no specific regulation on biofuel sustainability. There are, however, sustainability criteria for biodiesel feedstock (palm oil plantations) through the Indonesia

Sustainable Palm Oil (ISPO) scheme. The ISPO scheme covers greenhouse gas emissions (including methane capture), land use, biodiversity and labor. Some oil palm companies are recognized by the Roundtable on Sustainable Palm Oil (RSPO) as participants in the international sustainability scheme.

The GOI has set biofuel quality standards (SNI) through Directorate General of New and Renewable Energy (DGNRE) decree 723 for biodiesel (SNI 7182:2012) and DGNRE decree no 722 for bioethanol (SNI 7390:2012). Another SNI for pure plant oil has been enacted through DGNRE decree no 903 (SNI 7431:2008).

Table 5. Indonesia, Fuel Use Projections (Billion Liters), 2016 – 2025

Calendar Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Gasoline Total	33.0	35.0	37.0	39.0	42.0	45.0	48.0	51.0	54.0	57.4
Diesel Total*	32.4	34.0	35.7	37.5	39.4	41.5	43.4	45.1	47.1	49.2
On-road and off-road	24.90	26.51	28.24	30.07	32.03	34.11	36.07	37.73	39.47	41.28
Industry	6.88	6.90	6.93	6.95	6.96	6.98	7.00	7.02	7.30	7.60
Heating	0.59	0.55	0.52	0.47	0.44	0.41	0.37	0.35	0.33	0.32
Jet Fuel Total	6.7	7.2	7.8	8.5	9.1	9.9	10.7	11.6	12.4	13.2
Total Fuel Markets	72.1	76.2	80.5	84.9	90.6	96.4	102.1	107.7	113.5	119.8

Source: Post calculation based on Indonesian Biofuel Producers Association and Government of Indonesia projection.

*Off-road agricultural, construction, mining, shipping and rail sectors are not directly targeted by subsidies.

III. Ethanol

Production

The Indonesian bioethanol program was ended in 2010. Fuel ethanol (FE) producers indicate that PERTAMINA's purchase pricing scheme insufficient, and as a result, Indonesia's domestic fuel ethanol market never developed. Fuel grade ethanol production occurred in 2014 and 2015, but was minimal and primarily intended for export. In June 2015, state-owned company PT Eneo (a subsidiary of state-owned Company PTPN X), moved towards an agreement to produce fuel ethanol for Pertamina. Post notes that this agreement is not yet finalized and there is no indication that it will bring significant change to the fuel market. Given these factors, Post expects fuel ethanol production will remain extremely limited through 2016 with no domestic consumption, and production of ethanol for other industrial chemicals will remain small but continue growing. Indonesia is expected to produce 230 million liters of ethanol for use in non-fuel, other industrial chemicals for domestic use or export in 2015 and 2016, slightly greater than the 220 million liters in 2014.

MEMR sources cite 9 fuel ethanol plants in Indonesia, but industry sources state there are only 2 fuel ethanol plants. Post believes some of the fuel facilities are either idle or have switched to the production of other industrial chemicals. Post estimates there are currently 2 fuel ethanol plants and 18 plants producing ethanol for other non-beverage uses which use just over half of their combined production capacity.

Consumption

Gasoline has made up approximately 47 percent of Indonesia's total fuel consumption for the last three years. Under the past mandatory biofuel program the blend goal for ethanol was 1% to 2%. However the blend average has never exceeded 1/100th of 1% of the total gasoline supply). The growing demand of industrial grade ethanol produced in Indonesia is intended for pharmacy and chemical solvent producers.

Trade

There was very limited export of fuel ethanol in 2014. About 90 percent of industrial grade exports were sent to Japan and Philippines in 2014. Post estimates that exports of non-fuel industrial grade ethanol will increase about 7 percent to 78 million liters by the end of this year.

Stock

Post expects ethanol stocks to reach 75 and 78 million liters in 2015 and 2016 respectively.

Production, Supply and Demand Data Statistics

Ethanol Used as Fuel and Other Industrial Chemicals (million liters)										
Calendar Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Beginning Stocks	27	33	31	42	36	39	50	57	65	75
Fuel Begin Stocks	0	1	0	0	0	0	0	0	0	0
Production	166	169	172	175	200	205	210	220	230	230
Fuel Production	1.00	1.2	1.7	0	0	0	0	4	5	5
Imports	2.6	0.11	0.11	0.23	0.63	0.15	0.46	0.46	0.46	0.46
Fuel Imports	0	0	0	0	0	0	0	0	0	0
Exports	35	47	33	49	63	59	67	73	78	83
Fuel Exports	0	0	0	0	0	0	0	4	5	5
Consumption	128	124	128	132	134	135	137	139	142	145
Fuel Consumption	1	2	1	0	0	0	0	0	0	0
Ending Stocks	33	31	42	36	39	50	57	65	75	78
Fuel Ending Stocks	1	0	0	0	0	0	0	0	0	0
Total BalanceCheck	0	0	0	0	0	0	0	0	0	0
Fuel BalanceCheck	0	0	0	0	0	0	0	0	0	0
Production Capacity										
Number of Refineries	15	19	20	20	20	20	20	20	20	20
Nameplate Capacity	219	272	272	495	513	513	513	513	513	513
Capacity Use (%)	76%	62%	63%	35%	39%	40%	41%	43%	45%	45%
Feedstock Use (1,000 MT)										
Molasses	664	676	688	700	800	820	840	880	920	920
Market Penetration										
Fuel Ethanol	1	2	1	0	0	0	0	0	0	0
Gasoline	17,500	19,470	21,389	23,062	25,392	29,276	30,511	30,925	32,500	33,000
Blend Rate (%)	0.004%	0.009%	0.006%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

IV. Biodiesel

Indonesian biodiesel production was founded on the country's strong position as a palm oil producer and European demand for biodiesel. 80% of production was shipped overseas (mostly to Europe) as recently as 2009, but the importance of exports has since diminished. Following fossil fuel price rises a decade ago, the Government of Indonesia started encouraging domestic biodiesel consumption. These policies were slow to catch on due to the cost competitiveness of fossil fuels vis-à-vis Indonesian palm-based biodiesel. More recently,

biodiesel consumption started to pick up as incentives have been developed. However, this growth has fallen short of targets, notably due to infrastructure shortcomings and funding issues for incentive programs. Throughout most of 2015, biodiesel was not blended for on-road transportation due to funding shortfalls. Industry contacts, however, expect this to change towards the end of the year, when new funding programs are established. If Indonesia's new biofuels policy is effective, Indonesian consumption will be poised to make a significant jump. Sales to traditional export markets are expected to remain far below recent years due to competition from lower-priced fossil fuels and an export levy imposed on Indonesian palm oil products.

Production

2015 biodiesel production has dropped precipitously and estimated capacity use has fallen to 24% due to lagging export demand and issues implementing biodiesel blending subsidies for transportation. Producers remain optimistic nonetheless, noting that there are abundant CPO stocks, an increase from a 10 to 15 percent mandatory blending rate, and the creation of the new Plantation Fund. As a result of this optimism, blending capacity continues to rise. At least one major plantation owner also reports plans to increase the installed capacity of biodiesel refineries by 340-680 million liters in 2016. Post notes that although there are early concerns that a severe El Nino in Indonesia may drive down CPO production in 2016, producer's long-term perspective is bullish, and are bolstered by ample CPO stocks.

Indonesian biodiesel production capacity remains underutilized. The recent implementation of the Plantation Fund levy is expected to pick up production, as it will introduce a new funding stream to support biodiesel consumption in Indonesia. The effectiveness of the Plantation Fund levy is expected to become more apparent later in the year, when biodiesel producers expect that blending subsidies will be re-instituted in September 2015, after being stopped in February 2015. (The levy was instituted July 16, while blending subsidies have yet to be paid). Based on the drop off of exports and the lack of blending funding throughout most of 2015, Post revises its 2015 production number down to 1.6 billion liters in 2015. The 1.6 billion liter estimate is dependent on the successful implementation of subsidies in September. Production may be further spurred in the event of rising fossil fuel prices, which will support export sales as well as contribute to biodiesel's competitiveness in Indonesia.

Consumption

The new biofuels mandatory program is expected to increase domestic biodiesel consumption. Under the regulation, the targeted blending rate for the transportation and industrial sectors was increased from 10 to 15 percent as of April 2015. Some concern has been raised by industry associations and local electric company PLN regarding the 25% targeted blending rate for electricity, noting that the mandated blend rate exceeds the capacity of their generators. Industry groups note, however, that mandatory blending for electricity generation is not currently supported by a subsidy, leaving little possibility for expansion of biodiesel consumption in this sector.

The GOI is targeting about 3.84 billion liters of biodiesel to be blended into diesel for transport in 2015. However, Indonesia will fall far short of its target due to delays in subsidy implementation. A consumption estimate of 1.45 billion liters for 2015 is more reasonable

assuming that the subsidy is implemented in September 2015. If Indonesia continues on track with its blending mandate, it could consume 2.7 billion liters in 2016, achieving an overall blending rate of 10.3 percent in 2016. Post notes that blending for the transportation sector will remain focused on major population centers such as Java and Sumatera, due to its proximity to blending facilities and high consumer concentrations. Outlying regions of Indonesia, particularly in the east, are expected to linger on biodiesel adoption due to logistical challenges such as a lack of blending capacity and sparse distribution networks. Despite these shortfalls, the expansion of Indonesian biofuel blending will be amongst the highest in the world, with the potential for continued growth.

Trade

Biodiesel exports have fallen sharply in the first 5 months of 2015, and are expected to round out the year at a mere 150 million liters. EU imports of Indonesian biodiesel were significant from 2010 through 2012, following anti-dumping duties placed on US biodiesel. EU imports from Indonesia, however, fell sharply in 2013 and virtually ceased thereafter, following anti-dumping duties that were also enforced on Indonesia. In contrast, exports to China picked up following the elimination of its tax on biodiesel imports. Looking to 2015, however, Indonesian exports to China have dropped off considerably in the face of low fossil fuel prices. The addition of the GOI's Plantation Fund, which will levies \$20/ton on biodiesel exports, will reduce the price competitiveness of exports reducing export prospects further. January – May 2015 trade data sets Indonesian biodiesel exports at 111 million liters. Post estimates that exports may reach 150 million liters by the end of calendar year 2015, while 2016 exports will reach 100 million liters.

Table 6: Indonesian Biodiesel Exports, As Reported By Importing Countries, million liters

Reporting Country	Quantity			
	2012	2013	2014	2015 (Jan-May)
Reporting Total	1447	1730	1856	111
EU 28	1288	448	2	6
Australia	15	28	117	6
China	100	528	931	11
Malaysia	0	229	520	0
United States	0	287	194	87
Singapore	0	199	91	0
Peru	43	10	0	0

**Commodity: 271020, Petroleum Oils And Preparations Containing Biodiesel, Containing By Weight Gt=70% Petroleum Oils and 382600, Biodiesel And Mixtures Thereof, Not Containing Or Containing Less Than 70% By Weight Of Petroleum Oils*

Stocks

Indonesian biodiesel stocks remain stable and low. The decline of biodiesel production in 2015 has helped maintain low stocks, while the increase in 2016 consumption is expected to keep stock at a consistent level.

Production, Supply and Demand Data Statistics

Biodiesel (million liters)										
Calendar Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Beginning Stocks	27	18	15	81	38	40	55	7	7	7
Production	270	630	330	740	1,800	2,200	2,800	3,300	1,600	2,800
Imports	0	0	0	0	0	0	0	0	0	0
Exports	257	610	204	563	1,440	1,515	1,800	1,700	150	100
Consumption	22	23	60	220	358	670	1,048	1,600	1,450	2,700
Ending Stocks	18	15	81	38	40	55	7	7	7	7
BalanceCheck	0	0	0	0	0	0	0	0	0	0
Production Capacity										
Number of Biorefineries	7	14	20	22	22	26	26	26	31	33
Nameplate Capacity	1,709	3,138	3,528	3,936	4,281	4,881	5,670	5,670	6,750	7,000
Capacity Use (%)	15.8%	20.1%	9.4%	18.8%	42.0%	45.1%	49.4%	58.2%	23.7%	40.0%
Feedstock Use (1,000 MT)										
CPO	265	619	324	727	1,769	2,163	2,752	3,244	1,573	2,752
Market Penetration (million liters)										
Biodiesel, on and offroad	18	18	48	176	286	637	996	1,520	1,378	2,565
Diesel, on and off-road use	9,400	10,311	12,781	15,291	16,045	25,040	25,254	24,223	24,739	24,896
Blend Rate (%)	0.2%	0.2%	0.4%	1.2%	1.8%	2.5%	3.9%	6.3%	5.6%	10.3%
Diesel, total use	15,575	17,001	20,158	23,049	22,921	34,301	34,127	32,734	32,551	32,368

V. Advanced Biofuels

Local research on second-generation biofuels is being conducted by Indonesia's Institute of Science (LIPI). Researchers are looking into empty fresh fruit bunches, a palm oil plantation waste product. LIPI research report that raw material costs for bunches was advantageous over cassava, but that overall costs of production remained higher due to greater technological burdens.

